

REMARKS

The Office Action mailed January 21, 2010, has been received and its contents carefully noted. Claims 1-14 were pending. Claims 1-14 were rejected. By this Response, claim 1 is amended to recite that the powder is characterized as an pyrogenically prepared zinc oxide aggregates. Support may be found in the specification, e.g. paragraph bridging pages 11 and 12 and 12 and 13. No statutory new matter has been added. Therefore, reconsideration and entry of the claims, as amended, are respectfully requested.

Rejection under 35 U.S.C. 103(a)

The Examiner rejected claims 1-14 under 35 U.S.C. 103(a) as being unpatentable over Kerner et al. (US 20020168524) in view of Shimohata et al. (JP 2003292790) and Anderson et al. (US 6521668 B2).

Applicants submit that a proper prima facie case of obviousness has not been established based on the art relied upon, especially when one considers the results presented in the specification.

Applicants direct the Examiners attention to the specification at pages 27- 35. The physico-chemical data of the surface-modified products of table 1, which appears on page 26. The table compares five properties: BET surface area [m^2/g], C content [%], loss on drying [%] and pH. The BET surface area values range from 17 to 18, pH ranges from 6.5 to 7.3 , loss on drying ranges from 0.1 to 0.2 and loss on ignition ranges from 0.8 to 1.4. (The typical zinc oxide educt is characterized on page 11 starting at line 20.) These products correspond to the product described in claim 1.

The combination of ZnO with any one of OC, OMC, PISA or BEMT produces synergistic results in terms of SPF (Sun Protection Factor) values. See pages 28-35. The Experiments compare the SPF values for ZnO alone, the OC, OMC, PISA or BEMT component alone, the combination, and in some cases include with the combination isostearic acid. The following table permits a quick comparison of SPF values.

Experiment No.	Components	SPF value	Page
1	ZnO	2	28
2	OC	3	28
3	ZnO/OC	6	28
4	ZnO	2	29
5	OC	3	29
6	ZnO/OC	8	29
7	ZnO/OC/IA	9	29
8	ZnO	2	30
9	OMC	7	30
10	ZnO/OMC	13	30
11	ZnO	2	31
12	OMC	6	31
13	ZnO/OMC	11	31
14	ZnO/OMC/IA	16	31
15	ZnO	2	32
16	PISA	5	32

17	ZnO/PISA	9	32
18	ZnO	2	33
19	PISA	5	33
20	ZnO/PISA	11	33
21	ZnO/PISA/IA	15	33
22	ZnO	2	34
23	BEMT	8	34
24	ZnO/BEMT	13	34
25	ZnO	2	35
26	BEMT	3	35
27	ZnO/BEMT	6	35
28	ZnO/BEMT/IA	8	35

It is clear from the Table that the SPF values for the combination of zinc oxide and the organic sun screen is more than a sum of the SPF values of the individual components. The Table also includes combinations of zinc oxide, the organic sunscreen and isostearic acid (IA), which have SPF values larger than the combination. Common to all the formulation is surface modified pyrogenically produced zinc oxide having a BET surface area of $18 \pm 5 \text{ m}^2/\text{g}$.

The rejected claims include various claim types. These types include: the surface modified zinc oxide having a specified BET value range (claims 1-2, 12-14), processes for the preparation thereof (claims 3-6), cosmetic compositions (claims 7-8), and sunscreen preparations

(9-11). The Office action focuses only on the surface modified product as set forth in claim 1 and the fortuitous mention of a less preferred BET range which includes the claimed BET values. Those BET values are for a surface modified doped metal oxide product, which is distinct from that claimed. Doping effects particle morphology.

Accordingly, using Kerner et al.'s product as a starting point (educt) numerous selections (modifications) would need to have been made without any meaningful guidance except for Applicants' specification. The selections involve parameters which are critical to achieving the synergistic results shown in the specification.

Claim 1 has been further amended to more clearly set forth the nature of the surface modified zinc oxide powder. Even if the current amendment is not entered, the Examiner has not established a rationale for selecting a zinc oxide powder having the specified BET value (range), which is outside Kerner et al.'s preferred range. Optimization of Kerner et al. parameters would not be involved.

Kerner et al. teaches a surface modified, pyrogenically produced oxide doped by aerosol. Numerous silanes are disclosed as surface modifying agents. See paragraphs [0006]- [0118]. Zinc oxide is mentioned as a candidate oxide but is not exemplified. See Paragraph [0131]. Aluminum, cerium, potassium and noble metals are mentioned as dopants. See paragraph [0128], [0133] and [0137].¹ The BET value ranges taught include 5-600 m²/g, preferably 40-100 m²/g for a doped product. (The removal of the dopant would be expected to affect this teaching.)

Shimohata et al. teaches the addition of carbon black coated silanized zinc oxide particles having an average particle diameter of 0.01 to 10.0 to a resin composition to improve mechanical strength, light resistance and aging. Carbon black has a role as a pigment See paragraph [0087]. There is no mention of a hydrophobic surface resulting from the carbon black

¹Uses are mentioned for the silanized products are mentioned in paragraphs [0139]-[0147]. None are exemplified. It is stated in paragraph [0148], "As a result of the surface modification the products in accordance with the invention can be worked in more rapidly and in higher concentration into organic systems such as, e.g., polyester resin."

use.

Anderson et al. teaches cosmetic compositions for the protection of keratinous tissue against environmental factors such as smoke, smog and UV radiation.² In col. 4, a sun screen formulation is taught. Titanium dioxide and zinc oxide are mentioned as ingredients. The nature of these oxides in terms of silanization, BET values, etc. is not discussed.

The secondary references do not provide the guidance necessary to modify the teachings of Kerner et al. Question such as Why is the dopant “removed” or not used? Why is zinc oxide itself selected? Why select zinc oxides having the specified claimed BET value? Why select zinc oxide powder comprising aggregates (claims 13 and 14 present this issue and were previously considered by the Examiner) remain unanswered. There is no inherency issue- no similar preparatory process, no similar educts, etc. There is just speculation. It appears that the present rejection may have been motivated by the Examiner’s concerns regarding claim breadth. The amendments address this.

A species is not rendered obvious by a generic teaching if the species is clearly patentably distinct (established synergistic results) and there is no guidance (teaching) which would lead to its selection from numerous possibilities.

Withdrawal of the rejection is respectfully requested, especially in light of the amendments to the claims.

Request for Interview

A telephonic or an in-person interview is respectfully requested should there be any remaining issues.

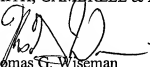
² The compositions have as an essential antioxidant: hesperetin, tetrahydrocurcumin, tetrahydrodemethoxycurcumin or tetrahydrobisdemethoxycurcumin.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider the presently outstanding rejection and that it be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300, Attorney Docket No. 032301.443**.

Respectfully submitted,
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